SEQUENCE LISTING

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      Kastelein, Robert A.
      Bazan, J. Fernando

<120> Mammalian Cytokines; Related Reagents and Methods

<130> DX0935K

<140> 09/xxx,xxx
<141> 2000-03-9

<160> 13

<170> PatentIn Ver. 2.0

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gccccagccc catggacctc cgagcagggg actcgtgggg g atg tta gcg tgc ctg 176
                                             Met Leu Ala Cys Leu
                                              -15

tgc acg gtg ctc tgg cac ctc cct gca gtg cca gct ctc aat cgc aca 224
Cys Thr Val Leu Trp His Leu Pro Ala Val Pro Ala Leu Asn Arg Thr
     -10   -5   -1   1

ggg gac cca ggg cct ggc ccc tcc atc cag aaa acc tat gac ctc acc 272
Gly Asp Pro Gly Pro Gly Pro Ser Ile Gln Lys Thr Tyr Asp Leu Thr
 5   10   15   20

cgc tac ctg gag cac caa ctc cgc agc ttg gct ggg acc tat ctg aac 320
Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala Gly Thr Tyr Leu Asn
                 25   30   35

tac ctg ggc ccc cct ttc aac gag cca gac ttc aac cct ccc cgc ctg 368
Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe Asn Pro Pro Arg Leu
             40   45   50

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ggg gca gag act ctg ccc agg gcc act gtt gac ttg gag gtg tgg cga    416
Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asp Leu Glu Val Trp Arg
         55                  60                  65

agc ctc aat gac aaa ctg cgg ctg acc cag aac tac gag gcc tac agc    464
Ser Leu Asn Asp Lys Leu Arg Leu Thr Gln Asn Tyr Glu Ala Tyr Ser
         70                  75                  80

cac ctt ctg tgt tac ttg cgt ggc ctc aac cgt cag gct gcc act gct    512
His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg Gln Ala Ala Thr Ala
 85                  90                  95                 100

gag ctg cgc cgc agc ctg gcc cac ttc tgc acc agc ctc cag ggc ctg    560
Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr Ser Leu Gln Gly Leu
                105                 110                 115

ctg ggc agc att gcg ggc gtc atg gca gct ctg ggc tac cca ctg ccc    608
Leu Gly Ser Ile Ala Gly Val Met Ala Ala Leu Gly Tyr Pro Leu Pro
                120                 125                 130

cag ccg ctg cct ggg act gaa ccc act tgg act cct ggc cct gcc cac    656
Gln Pro Leu Pro Gly Thr Glu Pro Thr Trp Thr Pro Gly Pro Ala His
         135                 140                 145

agt gac ttc ctc cag aag atg gac gac ttc tgg ctg ctg aag gag ctg    704
Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp Leu Leu Lys Glu Leu
         150                 155                 160

cag acc tgg ctg tgg cgc tcg gcc aag gac ttc aac cgg ctc aag aag    752
Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe Asn Arg Leu Lys Lys
165                 170                 175                 180

aag atg cag cct cca gca gct gca gtc acc ctg cac ctg ggg gct cat    800
Lys Met Gln Pro Pro Ala Ala Ala Val Thr Leu His Leu Gly Ala His
                185                 190                 195

ggc ttc tgacttctga ccttctcctc ttcgctcccc cttcaaaccc tgctcccact    856
Gly Phe

ttgtgagagc cagccctgta tgccaacacc tgttgagcca ggagacagaa gctgtgagcc    916

tctggccctt tcctggaccg gctgggcgtg tgatgcgatc agccctgtct cctccccacc    976

tcccaaaggt ctaccgagct ggggaggagg tacagtaggc cctgtcctgt cctgtttcta   1036

caggaagtca tgctcgaggg agtgtgaagt ggttcaggtt ggtgcagagg cgctcatggc   1096

ctcctgcttc ttgcctacca cttggccagt gcccacccag cccctcaggt ggcacatctg   1156

gagggcaggg gttgagggc caccaccaca catgcctttc tggggtgaag ccctttggct   1216

gccccactct ccttggatgg gtgttgctcc cttatcccca aatcactcta tacatccaat   1276

tcaggaaaca aacatggtgg caattctaca caaaaagaga tgagattaac agtgcagggt   1336

tggggtctgc attggaggtg ccctataaac cagaagagaa aatactgaaa gcacaggggc   1396
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agggacagac cagaccagac ccaggagtct ccaaagcaca gagtggcaaa caaaacccga 1456

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cccttcccca gggtatctgt gggttgccag gctggggagg gcaaccatag ccacaccaca 1576

ggatttcctg aaagtttaca atgcagtagc attttggggt gtagggtggc agctccccaa 1636

ggccctgccc cccagcccca cccactcatg actctaagtg tgttgtatta atatttattt 1696

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Ala Leu Asn Arg Thr Gly Asp Pro Gly Pro Gly Pro Ser Ile Gln Lys
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Thr Tyr Asp Leu Thr Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala
                20              25              30

Gly Thr Tyr Leu Asn Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe
            35              40              45

Asn Pro Pro Arg Leu Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asp
        50              55              60

Leu Glu Val Trp Arg Ser Leu Asn Asp Lys Leu Arg Leu Thr Gln Asn
    65              70              75

Tyr Glu Ala Tyr Ser His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg
80              85              90                  95

Gln Ala Ala Thr Ala Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr
            100             105             110

Ser Leu Gln Gly Leu Leu Gly Ser Ile Ala Gly Val Met Ala Ala Leu
            115             120             125

Gly Tyr Pro Leu Pro Gln Pro Leu Pro Gly Thr Glu Pro Thr Trp Thr
            130             135             140

Pro Gly Pro Ala His Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp
            145             150             155

Leu Leu Lys Glu Leu Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe
160             165             170             175
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Asn Arg Leu Lys Lys Lys Met Gln Pro Pro Ala Ala Ala Val Thr Leu
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His Leu Gly Ala His Gly Phe
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gct ctt aat cgc aca gga gat cca ggc cct ggc ccc tcc atc cag aaa   96
Ala Leu Asn Arg Thr Gly Asp Pro Gly Pro Gly Pro Ser Ile Gln Lys
  -1 1   5   10   15

acc tat gac ctc acc cgc tac ctg gag cat caa ctc cgc agc tta gct   144
Thr Tyr Asp Leu Thr Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala
                  20   25   30

ggg acc tac ctg aac tac ctg ggg ccc cct ttc aac gag cct gac ttc   192
Gly Thr Tyr Leu Asn Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe
              35   40   45

aat cct cct cga ctg ggg gca gaa act ctg ccc agg gcc acg gtc aac   240
Asn Pro Pro Arg Leu Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asn
          50   55   60

ttg gaa gtg tgg cga agc ctc aat gac agg ctg cgg ctg acc cag aac   288
Leu Glu Val Trp Arg Ser Leu Asn Asp Arg Leu Arg Leu Thr Gln Asn
          65   70   75

tat gag gcg tac agt cac ctc ctg tgt tac ttg cgt ggc ctc aac cgt   336
Tyr Glu Ala Tyr Ser His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg
  80   85   90   95

cag gct gcc aca gct gaa ctc cga cgt agc ctg gcc cac ttc tgt acc   384
Gln Ala Ala Thr Ala Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr
                  100   105   110

agc ctc cag ggc ctg ctg ggc agc att gca ggt gtc atg gcg acg ctt   432
Ser Leu Gln Gly Leu Leu Gly Ser Ile Ala Gly Val Met Ala Thr Leu
              115   120   125

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ggc tac cca ctg ccc cag cct ctg cca ggg act gag cca gcc tgg gcc    480
Gly Tyr Pro Leu Pro Gln Pro Leu Pro Gly Thr Glu Pro Ala Trp Ala
        130             135             140

cct ggc cct gcc cac agt gac ttc ctc cag aag atg gat gac ttc tgg    528
Pro Gly Pro Ala His Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp
    145             150             155

ctg ctg aag gag ctg cag acc tgg cta tgg cgt tca gcc aag gac ttc    576
Leu Leu Lys Glu Leu Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe
160             165             170             175

aac cgg ctt aag aag aag atg cag cct cca gca gct tca gtc acc ctg    624
Asn Arg Leu Lys Lys Lys Met Gln Pro Pro Ala Ala Ser Val Thr Leu
            180             185             190

cac ttg gag gcc cat ggt ttc tga                                    648
His Leu Glu Ala His Gly Phe
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Ala Leu Asn Arg Thr Gly Asp Pro Gly Pro Gly Pro Ser Ile Gln Lys
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Thr Tyr Asp Leu Thr Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala
            20              25              30

Gly Thr Tyr Leu Asn Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe
            35              40              45

Asn Pro Pro Arg Leu Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asn
        50              55              60

Leu Glu Val Trp Arg Ser Leu Asn Asp Arg Leu Arg Leu Thr Gln Asn
    65              70              75

Tyr Glu Ala Tyr Ser His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg
80              85              90              95

Gln Ala Ala Thr Ala Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr
            100             105             110

Ser Leu Gln Gly Leu Leu Gly Ser Ile Ala Gly Val Met Ala Thr Leu
            115             120             125

Gly Tyr Pro Leu Pro Gln Pro Leu Pro Gly Thr Glu Pro Ala Trp Ala
        130             135             140
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Pro Gly Pro Ala His Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp
    145   150   155

Leu Leu Lys Glu Leu Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe
160   165   170   175

Asn Arg Leu Lys Lys Lys Met Gln Pro Pro Ala Ala Ser Val Thr Leu
            180   185   190

His Leu Glu Ala His Gly Phe
            195

<210> 5
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<212> PRT
<213> rodent

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Met Lys Val Leu Ala Ala Gly Ile Val Pro Leu Leu Leu Leu Val Leu
    1   5   10   15

His Trp Lys His Gly Ala Gly Ser Pro Leu Pro Ile Thr Pro Val Asn
            20   25   30

Ala Thr Cys Ala Ile Arg His Pro Cys His Gly Asn Leu Met Asn Gln
            35   40   45

Ile Lys Asn Gln Leu Ala Gln Leu Asn Gly Ser Ala Asn Ala Leu Phe
    50   55   60

Ile Ser Tyr Tyr Thr Ala Gln Gly Glu Pro Phe Pro Asn Asn Val Glu
    65   70   75   80

Lys Leu Cys Ala Pro Asn Met Thr Asp Phe Pro Ser Phe His Gly Asn
            85   90   95

Gly Thr Glu Lys Thr Lys Leu Val Glu Leu Tyr Arg Met Val Ala Tyr
            100   105   110

Leu Ser Ala Ser Leu Thr Asn Ile Thr Arg Asp Gln Lys Val Leu Asn
    115   120   125

Pro Thr Ala Val Ser Leu Gln Val Lys Leu Asn Ala Thr Ile Asp Val
    130   135   140

Met Arg Gly Leu Leu Ser Asn Val Leu Cys Arg Leu Cys Asn Lys Tyr
145   150   155   160

Arg Val Gly His Val Asp Val Pro Pro Val Pro Asp His Ser Asp Lys
            165   170   175

Glu Ala Phe Gln Arg Lys Lys Leu Gly Cys Gln Leu Leu Gly Thr Tyr
            180   185   190

Lys Gln Val Ile Ser Val Val Val Gln Ala Phe

<210> 6
<211> 202
<212> PRT
<213> primate

<400> 6
Met Lys Val Leu Ala Ala Gly Val Val Pro Leu Leu Leu Val Leu His
1   5   10   15

Trp Lys His Gly Ala Gly Ser Pro Leu Pro Ile Thr Pro Val Asn Ala
            20   25   30

Thr Cys Ala Ile Arg His Pro Cys His Asn Asn Leu Met Asn Gln Ile
        35   40   45

Arg Ser Gln Leu Ala Gln Leu Asn Gly Ser Ala Asn Ala Leu Phe Ile
    50   55   60

Leu Tyr Tyr Thr Ala Gln Gly Glu Pro Phe Pro Asn Asn Leu Asp Lys
65   70   75   80

Leu Cys Gly Pro Asn Val Thr Asp Phe Pro Pro Phe His Ala Asn Gly
            85   90   95

Thr Glu Lys Ala Lys Leu Val Glu Leu Tyr Arg Ile Val Val Tyr Leu
            100   105   110

Gly Thr Ser Leu Gly Asn Ile Thr Arg Asp Gln Lys Ile Leu Asn Pro
            115   120   125

Ser Ala Leu Ser Leu His Ser Lys Leu Asn Ala Thr Ala Asp Ile Leu
    130   135   140

Arg Gly Leu Leu Ser Asn Val Leu Cys Arg Leu Cys Ser Lys Tyr His
145   150   155   160

Val Gly His Val Asp Val Thr Tyr Gly Pro Asp Thr Ser Gly Lys Asp
            165   170   175

Val Phe Gln Lys Lys Lys Leu Gly Cys Gln Leu Leu Gly Lys Tyr Lys
            180   185   190

Gln Ile Ile Ala Val Leu Ala Gln Ala Phe
        195   200

<210> 7
<211> 201
<212> PRT
<213> primate

<400> 7
Met Ser Arg Arg Glu Gly Ser Leu Glu Asp Pro Gln Thr Asp Ser Ser
1   5   10   15

Val Ser Leu Leu Pro His Leu Glu Ala Lys Ile Arg Gln Thr His Ser
          20   25   30

Leu Ala His Leu Leu Thr Lys Tyr Ala Glu Gln Leu Leu Gln Glu Tyr
          35   40   45

Val Gln Leu Gln Gly Asp Pro Phe Gly Leu Pro Ser Phe Ser Pro Pro
      50   55   60

Arg Leu Pro Val Ala Gly Leu Ser Ala Pro Ala Pro Ser His Ala Gly
   65   70   75   80

Leu Pro Val His Glu Arg Leu Arg Leu Asp Ala Ala Ala Leu Ala Ala
              85   90   95

Leu Pro Pro Leu Leu Asp Ala Val Cys Arg Arg Gln Ala Glu Leu Asn
          100   105   110

Pro Arg Ala Pro Arg Leu Leu Arg Arg Leu Glu Asp Ala Ala Arg Gln
       115   120   125

Ala Arg Ala Leu Gly Ala Ala Val Glu Ala Leu Leu Ala Ala Leu Gly
   130   135   140

Ala Ala Asn Arg Gly Pro Arg Ala Glu Pro Pro Ala Ala Thr Ala Ser
145   150   155   160

Ala Ala Ser Ala Thr Gly Val Phe Pro Ala Lys Val Leu Gly Leu Arg
                  165   170   175

Val Cys Gly Leu Tyr Arg Glu Trp Leu Ser Arg Thr Glu Gly Asp Leu
              180   185   190

Gly Gln Leu Leu Pro Gly Gly Ser Ala
          195   200

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<211> 203
<212> PRT
<213> rodent

<400> 8
Met Ser Gln Arg Glu Gly Ser Leu Glu Asp His Gln Thr Asp Ser Ser
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Ile Ser Phe Leu Pro His Leu Glu Ala Lys Ile Arg Gln Thr His Asn
              20   25   30

Leu Ala Arg Leu Leu Thr Lys Tyr Ala Glu Gln Leu Leu Glu Glu Tyr
          35   40   45

Val Gln Gln Gln Gly Glu Pro Phe Gly Leu Pro Gly Phe Ser Pro Pro
      50   55   60

Arg Leu Pro Leu Ala Gly Leu Ser Gly Pro Ala Pro Ser His Ala Gly

Leu Pro Val Ser Glu Arg Leu Arg Gln Asp Ala Ala Ala Leu Ser Val
              85   90   95

Leu Pro Ala Leu Leu Asp Ala Val Arg Arg Arg Gln Ala Glu Leu Asn
             100   105   110

Pro Arg Ala Pro Arg Leu Leu Arg Ser Leu Glu Asp Ala Ala Arg Gln
         115   120   125

Val Arg Ala Leu Gly Ala Ala Val Glu Thr Val Leu Ala Ala Leu Gly
     130   135   140

Ala Ala Ala Arg Gly Pro Gly Pro Glu Pro Val Thr Val Ala Thr Leu
145   150   155   160

Phe Thr Ala Asn Ser Thr Ala Gly Ile Phe Ser Ala Lys Val Leu Gly
             165   170   175

Phe His Val Cys Gly Leu Tyr Gly Glu Trp Val Ser Arg Thr Glu Gly
             180   185   190

Asp Leu Gly Gln Leu Val Pro Gly Gly Val Ala
         195   200

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<213> primate

<400> 9
Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
  1   5   10   15

Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
             20   25   30

Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
             35   40   45

Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
     50   55   60

Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
65   70   75   80

Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
             85   90   95

His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
             100   105   110

Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
         115   120   125

Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
    130   135   140

Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
145   150   155   160

Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
                165   170   175

Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
                180   185   190

Tyr Ile Ala Asn Asn Lys Lys Met
        195   200

<210> 10
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<212> PRT
<213> rodent

<400> 10
Met Ala Phe Ala Glu Gln Ser Pro Leu Thr Leu His Arg Arg Asp Leu
    1   5   10   15

Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
                20   25   30

Ala Leu Met Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
            35   40   45

Ser Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
    50   55   60

Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
65   70   75   80

Arg Thr Phe Gln Gly Met Leu Thr Lys Leu Leu Glu Asp Gln Arg Val
            85   90   95

His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
            100   105   110

Thr Leu Gln Val Ser Ala Phe Ala Tyr Gln Leu Glu Glu Leu Met Ala
        115   120   125

Leu Leu Glu Gln Lys Val Pro Glu Lys Glu Ala Asp Gly Met Pro Val
    130   135   140

Thr Ile Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
145   150   155   160

Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
                165   170   175

Arg Val Ile Ser Ser His His Met Gly Ile Ser Ala His Glu Ser His
                180   185   190

Tyr Gly Ala Lys Gln Met
        195

Met Thr His Leu Ser Leu Leu Gly Pro Leu Pro Cys Val Arg Thr Ser
  1   5   10   15

Gln Gln Leu Pro Glu Thr Gln Gln Val Thr Thr Pro Gly Lys Lys Pro
            20   25   30

Val Ser Val Gly Arg Arg Glu Val Arg Val Pro Gly Thr Ala Leu Val
            35   40   45

Pro Ser Leu Leu Ser Val Ser Val Leu Leu Gln Leu Gln Tyr Gln Gly
        50   55   60

Ser Pro Phe Ser Asp Pro Gly Phe Ser Ala Pro Glu Leu Gln Leu Ser
  65   70   75   80

Ser Leu Pro Pro Ala Thr Ala Phe Phe Lys Thr Trp His Ala Leu Asp
                85   90   95

Asp Gly Glu Arg Leu Ser Leu Ala Gln Arg Ala Ile Asp Pro His Leu
            100   105   110

Gln Leu Val Glu Asp Asp Gln Ser Asp Leu Asn Pro Gly Ser Pro Ile
            115   120   125

Leu Pro Ala Gln Leu Gly Ala Ala Arg Leu Arg Ala Gln Gly Pro Leu
    130   135   140

Gly Asn Met Ala Ala Ile Met Thr Ala Leu Gly Leu Pro Ile Pro Pro
145   150   155   160

Glu Glu Asp Thr Pro Gly Leu Ala Ala Phe Gly Ala Ser Ala Phe Glu
                165   170   175

Arg Lys Cys Arg Gly Tyr Val Val Thr Arg Glu Tyr Gly His Trp Thr
            180   185   190

Asp Arg Ala Val Arg Asp Leu Ala Leu Leu Lys Ala Lys Tyr Ser Ala
            195   200   205

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<400> 12

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 1               5                   10                  15

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            20              25                  30

Arg Ala Gly Ser Gly Ala His Thr Ala Val Ile Ser Pro Gln Asp Pro
        35              40                  45

Thr Leu Leu Ile Gly Ser Ser Leu Leu Ala Thr Cys Ser Val His Gly
    50              55                  60

Asp Pro Pro Gly Ala Thr Ala Glu Gly Leu Tyr Trp Thr Leu Asn Gly
65              70                  75                  80

Arg Arg Leu Pro Pro Glu Leu Ser Arg Val Leu Asn Ala Ser Thr Leu
            85                  90                  95

Ala Leu Ala Leu Ala Asn Leu Asn Gly Ser Arg Gln Arg Ser Gly Asp
            100             105             110

Asn Leu Val Cys His Ala Arg Asp Gly Ser Ile Leu Ala Gly Ser Cys
        115             120                 125

Leu Tyr Val Gly Leu Pro Pro Glu Lys Pro Val Asn Ile Ser Cys Trp
    130             135                 140

Ser Lys Asn Met Lys Asp Leu Thr Cys Arg Trp Thr Pro Gly Ala His
145             150                 155                 160

Gly Glu Thr Phe Leu His Thr Asn Tyr Ser Leu Lys Tyr Lys Leu Arg
            165                 170                 175

Trp Tyr Gly Gln Asp Asn Thr Cys Glu Glu Tyr His Thr Val Gly Pro
            180             185                 190

His Ser Cys His Ile Pro Lys Asp Leu Ala Leu Phe Thr Pro Tyr Glu
        195             200                 205

Ile Trp Val Glu Ala Thr Asn Arg Leu Gly Ser Ala Arg Ser Asp Val
    210             215                 220

Leu Thr Leu Asp Ile Leu Asp Val Val Thr Thr Asp Pro Pro Pro Asp
225             230                 235                 240

Val His Val Ser Arg Val Gly Gly Leu Glu Asp Gln Leu Ser Val Arg
            245             250                 255

Trp Val Ser Pro Pro Ala Leu Lys Asp Phe Leu Phe Gln Ala Lys Tyr
            260             265                 270

Gln Ile Arg Tyr Arg Val Glu Asp Ser Val Asp Trp Lys Val Val Asp
        275             280                 285
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Asp Val Ser Asn Gln Thr Ser Cys Arg Leu Ala Gly Leu Lys Pro Gly
    290                 295             300

Thr Val Tyr Phe Val Gln Val Arg Cys Asn Pro Phe Gly Ile Tyr Gly
305             310             315                 320

Ser Lys Lys Ala Gly Ile Trp Ser Glu Trp Ser His Pro Thr Ala Ala
                325             330                 335

Ser Thr Pro Arg Ser Glu Arg Pro Gly Pro Gly Gly Gly Ala Cys Glu
            340             345             350

Pro Arg Gly Gly Glu Pro Ser Ser Gly Pro Val Arg Arg Glu Leu Lys
        355             360             365

Gln Phe Leu Gly Trp Leu Lys Lys His Ala Tyr Cys Ser Asn Leu Ser
    370             375             380

Phe Arg Leu Tyr Asp Gln Trp Arg Ala Trp Met Gln Lys Ser His Lys
385             390             395                 400

Thr Arg Asn Gln Val Leu Pro Asp Lys Leu
                405             410


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<213> rodent

<400> 13
Arg Pro Leu Ser Ser Leu Trp Ser Pro Leu Leu Leu Cys Val Leu Gly
  1             5             10              15

Val Pro Arg Gly Gly Ser Gly Ala His Thr Ala Val Ile Ser Pro Gln
            20              25              30

Asp Pro Thr Leu Leu Ile Gly Ser Ser Leu Gln Ala Thr Cys Ser Ile
        35              40              45

His Gly Asp Thr Pro Gly Ala Thr Ala Glu Gly Leu Tyr Trp Thr Leu
    50              55              60

Asn Gly Arg Arg Leu Pro Ser Leu Ser Arg Leu Leu Asn Thr Ser Thr
65              70              75              80

Leu Ala Leu Ala Leu Ala Asn Leu Asn Gly Ser Arg Gln Gln Ser Gly
            85              90              95

Asp Asn Leu Val Cys His Ala Arg Asp Gly Ser Ile Leu Ala Gly Ser
        100             105             110

Cys Leu Tyr Val Gly Leu Pro Pro Glu Lys Pro Phe Asn Ile Ser Cys
    115             120             125

Trp Ser Arg Asn Met Lys Asp Leu Thr Cys Arg Trp Thr Pro Gly Ala
    130             135             140
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His Gly Glu Thr Phe Leu His Thr Asn Tyr Ser Leu Lys Tyr Lys Leu
145   150   155   160

Arg Trp Tyr Gly Gln Asp Asn Thr Cys Glu Glu Tyr His Thr Val Gly
            165   170   175

Pro His Ser Cys His Ile Pro Lys Asp Leu Ala Leu Phe Thr Pro Tyr
            180   185   190

Glu Ile Trp Val Glu Ala Thr Asn Arg Leu Gly Ser Ala Arg Ser Asp
        195   200   205

Val Leu Thr Leu Asp Val Leu Asp Val Val Thr Thr Asp Pro Pro Pro
    210   215   220

Asp Val His Val Ser Arg Val Gly Gly Leu Glu Asp Gln Leu Ser Val
225   230   235   240

Arg Trp Val Ser Pro Pro Ala Leu Lys Asp Phe Leu Phe Gln Ala Lys
            245   250   255

Tyr Gln Ile Arg Tyr Arg Val Glu Asp Ser Val Asp Trp Lys Val Val
        260   265   270

Asp Asp Val Ser Asn Gln Thr Ser Cys Arg Leu Ala Gly Leu Lys Pro
    275   280   285

Gly Thr Val Tyr Phe Val Gln Val Arg Cys Asn Pro Phe Gly Ile Tyr
    290   295   300

Gly Ser Lys Lys Ala Gly Ile Trp Ser Glu Trp Ser His Pro Thr Ala
305   310   315   320

Ala Ser Thr Pro Arg Ser Glu Arg Pro Gly Pro Gly Gly Gly Val Cys
            325   330   335

Glu Pro Arg Gly Gly Glu Pro Ser Ser Gly Pro Val Arg Arg Glu Leu
            340   345   350

Lys Gln Phe Leu Gly Trp Leu Lys Lys His Ala Tyr Cys Ser Asn Leu
            355   360   365

Ser Phe Arg Leu Tyr Asp Gln Trp Arg Ala Trp Met Gln Lys Ser His
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Lys Thr Arg Asn Gln Asp Glu Gly Ile Leu Pro Ser Gly Arg Arg Gly
385   390   395   400

Ala Ala Arg Gly Pro Ala Gly
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SEQUENCE LISTING

SEQ ID NO: 1 is a primate IL-B60 natural nucleic acid sequence.
SEQ ID NO: 2 is a primate IL-B60 natural amino acid sequence.
SEQ ID NO: 3 is a rodent IL-B60 natural nucleic acid sequence.
SEQ ID NO: 4 is a rodent IL-B60 natural amino acid sequence.
SEQ ID NO: 5 is a rodent LIF.
SEQ ID NO: 6 is a primate LIF.
SEQ ID NO: 7 is a primate CT-1.
SEQ ID NO: 8 is a rodent CT-1.
SEQ ID NO: 9 is a primate CNTF.
SEQ ID NO: 10 is a rodent CNTF.
SEQ ID NO: 11 is a primate DNAX IL-40.
SEQ ID NO: 12 is a primate CLF-1.
SEQ ID NO: 13 is a rodent CLF-1.

<110> Oppmann, Birgit
     Timans, Jacqueline C.
     Kastelein, Robert A.
     Bazan, J. Fernando

<120> Mammalian Cytokines; Related Reagents and Methods

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<160> 13

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Cys Thr Val Leu Trp His Leu Pro Ala Val Pro Ala Leu Asn Arg Thr
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      Gly Asp Pro Gly Pro Gly Pro Ser Ile Gln Lys Thr Tyr Asp Leu Thr
       5              10                  15                  20
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      cgc tac ctg gag cac caa ctc cgc agc ttg gct ggg acc tat ctg aac   320
      Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala Gly Thr Tyr Leu Asn
                      25                  30                  35
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10

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      tac ctg ggc ccc cct ttc aac gag cca gac ttc aac cct ccc cgc ctg   368
      Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe Asn Pro Pro Arg Leu
                      40                  45                  50
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15

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      ggg gca gag act ctg ccc agg gcc act gtt gac ttg gag gtg tgg cga   416
      Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asp Leu Glu Val Trp Arg
                  55                  60                  65
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20

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      agc ctc aat gac aaa ctg cgg ctg acc cag aac tac gag gcc tac agc   464
      Ser Leu Asn Asp Lys Leu Arg Leu Thr Gln Asn Tyr Glu Ala Tyr Ser
               70                  75                  80
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      cac ctt ctg tgt tac ttg cgt ggc ctc aac cgt cag gct gcc act gct   512
      His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg Gln Ala Ala Thr Ala
               85                  90                  95                  100
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25

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      gag ctg cgc cgc agc ctg gcc cac ttc tgc acc agc ctc cag ggc ctg   560
      Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr Ser Leu Gln Gly Leu
                      105                 110                 115
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30

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      ctg ggc agc att gcg ggc gtc atg gca gct ctg ggc tac cca ctg ccc   608
      Leu Gly Ser Ile Ala Gly Val Met Ala Ala Leu Gly Tyr Pro Leu Pro
                      120                 125                 130
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35

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      Gln Pro Leu Pro Gly Thr Glu Pro Thr Trp Thr Pro Gly Pro Ala His
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40

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      agt gac ttc ctc cag aag atg gac gac ttc tgg ctg ctg aag gag ctg   704
      Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp Leu Leu Lys Glu Leu
               150                 155                 160
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      cag acc tgg ctg tgg cgc tcg gcc aag gac ttc aac cgg ctc aag aag   752
      Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe Asn Arg Leu Lys Lys
      165                 170                 175                 180
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45

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      aag atg cag cct cca gca gct gca gtc acc ctg cac ctg ggg gct cat   800
      Lys Met Gln Pro Pro Ala Ala Ala Val Thr Leu His Leu Gly Ala His
                      185                 190                 195
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      ggc ttc tgacttctga ccttctcctc ttcgctcccc cttcaaaccc tgctcccact   856
      Gly Phe
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      ttgtgagagc cagccctgta tgccaacacc tgttgagcca ggagacagaa gctgtgagcc   916
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      tcccaaaggt ctaccgagct ggggaggagg tacagtaggc cctgtcctgt cctgtttcta  1036
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      caggaagtca tgctcgaggg agtgtgaagt ggttcaggtt ggtgcagagg cgctcatggc  1096
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Thr Tyr Asp Leu Thr Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala
                20   25   30

Gly Thr Tyr Leu Asn Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe
                35   40   45

Asn Pro Pro Arg Leu Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asp
            50   55   60

Leu Glu Val Trp Arg Ser Leu Asn Asp Lys Leu Arg Leu Thr Gln Asn
        65   70   75

Tyr Glu Ala Tyr Ser His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg
    80   85   90   95

Gln Ala Ala Thr Ala Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr
                100   105   110

Ser Leu Gln Gly Leu Leu Gly Ser Ile Ala Gly Val Met Ala Ala Leu
                115   120   125

Gly Tyr Pro Leu Pro Gln Pro Leu Pro Gly Thr Glu Pro Thr Trp Thr
                130   135   140

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          Pro Gly Pro Ala His Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp
              145                 150                 155

 5        Leu Leu Lys Glu Leu Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe
              160                 165                 170                 175

          Asn Arg Leu Lys Lys Lys Met Gln Pro Pro Ala Ala Ala Val Thr Leu
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          His Leu Gly Ala His Gly Phe
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                  -15                 -10                 -5

          gct ctt aat cgc aca gga gat cca ggc cct ggc ccc tcc atc cag aaa     96
          Ala Leu Asn Arg Thr Gly Asp Pro Gly Pro Gly Pro Ser Ile Gln Lys
35         -1   1                  5                  10                  15

          acc tat gac ctc acc cgc tac ctg gag cat caa ctc cgc agc tta gct    144
          Thr Tyr Asp Leu Thr Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala
                              20                  25                  30
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          ggg acc tac ctg aac tac ctg ggg ccc cct ttc aac gag cct gac ttc    192
          Gly Thr Tyr Leu Asn Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe
                          35                  40                  45

45        aat cct cct cga ctg ggg gca gaa act ctg ccc agg gcc acg gtc aac    240
          Asn Pro Pro Arg Leu Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asn
                          50                  55                  60

          ttg gaa gtg tgg cga agc ctc aat gac agg ctg cgg ctg acc cag aac    288
50        Leu Glu Val Trp Arg Ser Leu Asn Asp Arg Leu Arg Leu Thr Gln Asn
                  65                  70                  75

          tat gag gcg tac agt cac ctc ctg tgt tac ttg cgt ggc ctc aac cgt    336
          Tyr Glu Ala Tyr Ser His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg
55         80                  85                  90                  95

          cag gct gcc aca gct gaa ctc cga cgt agc ctg gcc cac ttc tgt acc    384
          Gln Ala Ala Thr Ala Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr
                          100                 105                 110
60
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agc ctc cag ggc ctg ctg ggc agc att gca ggt gtc atg gcg acg ctt     432
Ser Leu Gln Gly Leu Leu Gly Ser Ile Ala Gly Val Met Ala Thr Leu
            115                 120                 125

ggc tac cca ctg ccc cag cct ctg cca ggg act gag cca gcc tgg gcc     480
Gly Tyr Pro Leu Pro Gln Pro Leu Pro Gly Thr Glu Pro Ala Trp Ala
            130                 135                 140

cct ggc cct gcc cac agt gac ttc ctc cag aag atg gat gac ttc tgg     528
Pro Gly Pro Ala His Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp
            145                 150                 155

ctg ctg aag gag ctg cag acc tgg cta tgg cgt tca gcc aag gac ttc     576
Leu Leu Lys Glu Leu Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe
160                 165                 170                 175

aac cgg ctt aag aag aag atg cag cct cca gca gct tca gtc acc ctg     624
Asn Arg Leu Lys Lys Lys Met Gln Pro Pro Ala Ala Ser Val Thr Leu
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cac ttg gag gcc cat ggt ttc tga                                     648
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Thr Tyr Asp Leu Thr Arg Tyr Leu Glu His Gln Leu Arg Ser Leu Ala
                 20                 25                 30

Gly Thr Tyr Leu Asn Tyr Leu Gly Pro Pro Phe Asn Glu Pro Asp Phe
                 35                 40                 45

Asn Pro Pro Arg Leu Gly Ala Glu Thr Leu Pro Arg Ala Thr Val Asn
            50                 55                 60

Leu Glu Val Trp Arg Ser Leu Asn Asp Arg Leu Arg Leu Thr Gln Asn
     65                 70                 75

Tyr Glu Ala Tyr Ser His Leu Leu Cys Tyr Leu Arg Gly Leu Asn Arg
     80                 85                 90                 95

Gln Ala Ala Thr Ala Glu Leu Arg Arg Ser Leu Ala His Phe Cys Thr
                100                 105                 110

Ser Leu Gln Gly Leu Leu Gly Ser Ile Ala Gly Val Met Ala Thr Leu
            115                 120                 125

Gly Tyr Pro Leu Pro Gln Pro Leu Pro Gly Thr Glu Pro Ala Trp Ala
            130                 135                 140
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        Pro Gly Pro Ala His Ser Asp Phe Leu Gln Lys Met Asp Asp Phe Trp
            145                 150                 155

  5     Leu Leu Lys Glu Leu Gln Thr Trp Leu Trp Arg Ser Ala Lys Asp Phe
            160                 165                 170                 175

        Asn Arg Leu Lys Lys Lys Met Gln Pro Pro Ala Ala Ser Val Thr Leu
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        His Leu Glu Ala His Gly Phe
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        His Trp Lys His Gly Ala Gly Ser Pro Leu Pro Ile Thr Pro Val Asn
 25                     20                  25                  30

        Ala Thr Cys Ala Ile Arg His Pro Cys His Gly Asn Leu Met Asn Gln
                    35                  40                  45

 30     Ile Lys Asn Gln Leu Ala Gln Leu Asn Gly Ser Ala Asn Ala Leu Phe
                50                  55                  60

        Ile Ser Tyr Tyr Thr Ala Gln Gly Glu Pro Phe Pro Asn Asn Val Glu
            65                  70                  75                  80
 35
        Lys Leu Cys Ala Pro Asn Met Thr Asp Phe Pro Ser Phe His Gly Asn
                        85                  90                  95

        Gly Thr Glu Lys Thr Lys Leu Val Glu Leu Tyr Arg Met Val Ala Tyr
 40                     100                 105                 110

        Leu Ser Ala Ser Leu Thr Asn Ile Thr Arg Asp Gln Lys Val Leu Asn
                    115                 120                 125

 45     Pro Thr Ala Val Ser Leu Gln Val Lys Leu Asn Ala Thr Ile Asp Val
                130                 135                 140

        Met Arg Gly Leu Leu Ser Asn Val Leu Cys Arg Leu Cys Asn Lys Tyr
            145                 150                 155                 160
 50
        Arg Val Gly His Val Asp Val Pro Pro Val Pro Asp His Ser Asp Lys
                        165                 170                 175

        Glu Ala Phe Gln Arg Lys Lys Leu Gly Cys Gln Leu Leu Gly Thr Tyr
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        Lys Gln Val Ile Ser Val Val Val Gln Ala Phe
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Thr Cys Ala Ile Arg His Pro Cys His Asn Asn Leu Met Asn Gln Ile
            35   40   45

Arg Ser Gln Leu Ala Gln Leu Asn Gly Ser Ala Asn Ala Leu Phe Ile
         50   55   60

Leu Tyr Tyr Thr Ala Gln Gly Glu Pro Phe Pro Asn Asn Leu Asp Lys
     65   70   75   80

Leu Cys Gly Pro Asn Val Thr Asp Phe Pro Pro Phe His Ala Asn Gly
                85   90   95

Thr Glu Lys Ala Lys Leu Val Glu Leu Tyr Arg Ile Val Val Tyr Leu
            100   105   110

Gly Thr Ser Leu Gly Asn Ile Thr Arg Asp Gln Lys Ile Leu Asn Pro
            115   120   125

Ser Ala Leu Ser Leu His Ser Lys Leu Asn Ala Thr Ala Asp Ile Leu
            130   135   140

Arg Gly Leu Leu Ser Asn Val Leu Cys Arg Leu Cys Ser Lys Tyr His
145   150   155   160

Val Gly His Val Asp Val Thr Tyr Gly Pro Asp Thr Ser Gly Lys Asp
                165   170   175

Val Phe Gln Lys Lys Lys Leu Gly Cys Gln Leu Leu Gly Lys Tyr Lys
                180   185   190

Gln Ile Ile Ala Val Leu Ala Gln Ala Phe
            195   200

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Leu Ala His Leu Leu Thr Lys Tyr Ala Glu Gln Leu Leu Gln Glu Tyr
            35   40   45

Val Gln Leu Gln Gly Asp Pro Phe Gly Leu Pro Ser Phe Ser Pro Pro
    50   55   60

Arg Leu Pro Val Ala Gly Leu Ser Ala Pro Ala Pro Ser His Ala Gly
    65   70   75   80

Leu Pro Val His Glu Arg Leu Arg Leu Asp Ala Ala Ala Leu Ala Ala
                85   90   95

Leu Pro Pro Leu Leu Asp Ala Val Cys Arg Arg Gln Ala Glu Leu Asn
            100   105   110

Pro Arg Ala Pro Arg Leu Leu Arg Arg Leu Glu Asp Ala Ala Arg Gln
        115   120   125

Ala Arg Ala Leu Gly Ala Ala Val Glu Ala Leu Leu Ala Ala Leu Gly
    130   135   140

Ala Ala Asn Arg Gly Pro Arg Ala Glu Pro Pro Ala Ala Thr Ala Ser
145   150   155   160

Ala Ala Ser Ala Thr Gly Val Phe Pro Ala Lys Val Leu Gly Leu Arg
                165   170   175

Val Cys Gly Leu Tyr Arg Glu Trp Leu Ser Arg Thr Glu Gly Asp Leu
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Gly Gln Leu Leu Pro Gly Gly Ser Ala
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Ile Ser Phe Leu Pro His Leu Glu Ala Lys Ile Arg Gln Thr His Asn
                20   25   30

Leu Ala Arg Leu Leu Thr Lys Tyr Ala Glu Gln Leu Leu Glu Glu Tyr
            35   40   45

Val Gln Gln Gln Gly Glu Pro Phe Gly Leu Pro Gly Phe Ser Pro Pro
    50   55   60

Arg Leu Pro Leu Ala Gly Leu Ser Gly Pro Ala Pro Ser His Ala Gly
    65   70   75   80

Leu Pro Val Ser Glu Arg Leu Arg Gln Asp Ala Ala Ala Leu Ser Val
                85   90   95

Leu Pro Ala Leu Leu Asp Ala Val Arg Arg Arg Gln Ala Glu Leu Asn
            100   105   110

Pro Arg Ala Pro Arg Leu Leu Arg Ser Leu Glu Asp Ala Ala Arg Gln
        115   120   125

Val Arg Ala Leu Gly Ala Ala Val Glu Thr Val Leu Ala Ala Leu Gly
        130   135   140

Ala Ala Ala Arg Gly Pro Gly Pro Glu Pro Val Thr Val Ala Thr Leu
145   150   155   160

Phe Thr Ala Asn Ser Thr Ala Gly Ile Phe Ser Ala Lys Val Leu Gly
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Phe His Val Cys Gly Leu Tyr Gly Glu Trp Val Ser Arg Thr Glu Gly
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Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
            35   40   45

Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
        50   55   60

Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
65   70   75   80

Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
                85   90   95

His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
                100   105   110

Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
        115   120   125

Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
        130   135   140

Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
145   150   155   160

Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
                165   170   175

Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
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Tyr Ile Ala Asn Asn Lys Lys Met
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Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
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Ala Leu Met Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
          35   40   45

Ser Leu Asp Ser Val Asp Gly Val Pro Val Ala Ser Thr Asp Arg Trp
      50   55   60

Ser Glu Met Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
  65   70   75   80

Arg Thr Phe Gln Gly Met Leu Thr Lys Leu Leu Glu Asp Gln Arg Val
              85   90   95

His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
              100   105   110

Thr Leu Gln Val Ser Ala Phe Ala Tyr Gln Leu Glu Glu Leu Met Ala
          115   120   125

Leu Leu Glu Gln Lys Val Pro Glu Lys Glu Ala Asp Gly Met Pro Val
          130   135   140

Thr Ile Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
145   150   155   160

Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
              165   170   175

Arg Val Ile Ser Ser His His Met Gly Ile Ser Ala His Glu Ser His
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Tyr Gly Ala Lys Gln Met
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Val Ser Val Gly Arg Arg Glu Val Arg Val Pro Gly Thr Ala Leu Val
            35   40   45

Pro Ser Leu Leu Ser Val Ser Val Leu Leu Gln Leu Gln Tyr Gln Gly
        50   55   60

Ser Pro Phe Ser Asp Pro Gly Phe Ser Ala Pro Glu Leu Gln Leu Ser
    65   70   75   80

Ser Leu Pro Pro Ala Thr Ala Phe Phe Lys Thr Trp His Ala Leu Asp
                85   90   95

Asp Gly Glu Arg Leu Ser Leu Ala Gln Arg Ala Ile Asp Pro His Leu
            100   105   110

Gln Leu Val Glu Asp Asp Gln Ser Asp Leu Asn Pro Gly Ser Pro Ile
        115   120   125

Leu Pro Ala Gln Leu Gly Ala Ala Arg Leu Arg Ala Gln Gly Pro Leu
    130   135   140

Gly Asn Met Ala Ala Ile Met Thr Ala Leu Gly Leu Pro Ile Pro Pro
145   150   155   160

Glu Glu Asp Thr Pro Gly Leu Ala Ala Phe Gly Ala Ser Ala Phe Glu
                165   170   175

Arg Lys Cys Arg Gly Tyr Val Val Thr Arg Glu Tyr Gly His Trp Thr
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Arg Ala Gly Ser Gly Ala His Thr Ala Val Ile Ser Pro Gln Asp Pro
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Thr Leu Leu Ile Gly Ser Ser Leu Leu Ala Thr Cys Ser Val His Gly
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Asp Pro Pro Gly Ala Thr Ala Glu Gly Leu Tyr Trp Thr Leu Asn Gly
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                     85              90                  95

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         Gly Glu Thr Phe Leu His Thr Asn Tyr Ser Leu Lys Tyr Lys Leu Arg
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                     195             200             205
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         Leu Thr Leu Asp Ile Leu Asp Val Val Thr Thr Asp Pro Pro Pro Asp
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         Val His Val Ser Arg Val Gly Gly Leu Glu Asp Gln Leu Ser Val Arg
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   35    Trp Val Ser Pro Pro Ala Leu Lys Asp Phe Leu Phe Gln Ala Lys Tyr
                     260             265             270

         Gln Ile Arg Tyr Arg Val Glu Asp Ser Val Asp Trp Lys Val Val Asp
                 275             280             285
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         Asp Val Ser Asn Gln Thr Ser Cys Arg Leu Ala Gly Leu Lys Pro Gly
                 290             295             300

         Thr Val Tyr Phe Val Gln Val Arg Cys Asn Pro Phe Gly Ile Tyr Gly
   45    305             310             315             320

         Ser Lys Lys Ala Gly Ile Trp Ser Glu Trp Ser His Pro Thr Ala Ala
                     325             330             335

   50    Ser Thr Pro Arg Ser Glu Arg Pro Gly Pro Gly Gly Gly Ala Cys Glu
                     340             345             350

         Pro Arg Gly Gly Glu Pro Ser Ser Gly Pro Val Arg Arg Glu Leu Lys
                 355             360             365
   55
         Gln Phe Leu Gly Trp Leu Lys Lys His Ala Tyr Cys Ser Asn Leu Ser
                 370             375             380

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<213> rodent

<400> 13
Arg Pro Leu Ser Ser Leu Trp Ser Pro Leu Leu Leu Cys Val Leu Gly
  1   5   10   15

Val Pro Arg Gly Gly Ser Gly Ala His Thr Ala Val Ile Ser Pro Gln
            20   25   30

Asp Pro Thr Leu Leu Ile Gly Ser Ser Leu Gln Ala Thr Cys Ser Ile
        35   40   45

His Gly Asp Thr Pro Gly Ala Thr Ala Glu Gly Leu Tyr Trp Thr Leu
      50   55   60

Asn Gly Arg Arg Leu Pro Ser Leu Ser Arg Leu Leu Asn Thr Ser Thr
    65   70   75   80

Leu Ala Leu Ala Leu Ala Asn Leu Asn Gly Ser Arg Gln Gln Ser Gly
              85   90   95

Asp Asn Leu Val Cys His Ala Arg Asp Gly Ser Ile Leu Ala Gly Ser
            100   105   110

Cys Leu Tyr Val Gly Leu Pro Pro Glu Lys Pro Phe Asn Ile Ser Cys
      115   120   125

Trp Ser Arg Asn Met Lys Asp Leu Thr Cys Arg Trp Thr Pro Gly Ala
    130   135   140

His Gly Glu Thr Phe Leu His Thr Asn Tyr Ser Leu Lys Tyr Lys Leu
145   150   155   160

Arg Trp Tyr Gly Gln Asp Asn Thr Cys Glu Glu Tyr His Thr Val Gly
            165   170   175

Pro His Ser Cys His Ile Pro Lys Asp Leu Ala Leu Phe Thr Pro Tyr
            180   185   190

Glu Ile Trp Val Glu Ala Thr Asn Arg Leu Gly Ser Ala Arg Ser Asp
        195   200   205

Val Leu Thr Leu Asp Val Leu Asp Val Val Thr Thr Asp Pro Pro Pro
    210   215   220

Asp Val His Val Ser Arg Val Gly Gly Leu Glu Asp Gln Leu Ser Val
225   230   235   240

Arg Trp Val Ser Pro Pro Ala Leu Lys Asp Phe Leu Phe Gln Ala Lys
            245   250   255

Tyr Gln Ile Arg Tyr Arg Val Glu Asp Ser Val Asp Trp Lys Val Val
      260   265   270

5   Asp Asp Val Ser Asn Gln Thr Ser Cys Arg Leu Ala Gly Leu Lys Pro
         275   280   285

Gly Thr Val Tyr Phé Val Gln Val Arg Cys Asn Pro Phe Gly Ile Tyr
   290   295   300

10   Gly Ser Lys Lys Ala Gly Ile Trp Ser Glu Trp Ser His Pro Thr Ala
   305   310   315   320

Ala Ser Thr Pro Arg Ser Glu Arg Pro Gly Pro Gly Gly Gly Val Cys
         325   330   335

15

Glu Pro Arg Gly Gly Glu Pro Ser Ser Gly Pro Val Arg Arg Glu Leu
         340   345   350

20   Lys Gln Phe Leu Gly Trp Leu Lys Lys His Ala Tyr Cys Ser Asn Leu
         355   360   365

Ser Phe Arg Leu Tyr Asp Gln Trp Arg Ala Trp Met Gln Lys Ser His
   370   375   380

25   Lys Thr Arg Asn Gln Asp Glu Gly Ile Leu Pro Ser Gly Arg Arg Gly
   385   390   395   400

Ala Ala Arg Gly Pro Ala Gly
         405

30